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ARITHMETIC.

Conducted by B. F. FINKEL, Kidder, Mo. All contributions to this department should be sent to him.

SOLUTIONS TO PROBLEMS.

28. Proposed by J. K. ELLWOOD, A. M., Principal of Colfax School, Pittsburg, Pennsylvania.

A rectangular field (not a square one) contains as many acres as there are boards in the fence enclosing it. The fence is four boards high and each board is eleven feet long. How many acres in the field?

Solution by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland; G. B. M. ZERR, A. M., Principal of High School, Staunton, Virginia, and the PROPOSER.

Let x and px feet represent the length and breadth,

$$\text{then } \frac{8(1+p)x}{11}=\frac{px^2}{9\times30\tfrac{1}{4}\times160}\ldots\ldots(1).$$

$$\therefore\quad x=31680\left(1+\frac{1}{p}\right),\text{ and } px=31680(1+p).$$

Hence the number of boards in the fence is

$$B=\frac{8(1+p)x}{11},=\frac{23040(1+p)^2}{p}\ldots\ldots(2);$$

and the number of acres in the field is

$$A=\frac{px^2}{9\times30\tfrac{1}{4}\times160},=\frac{[31680(1+p)]^2}{43560p}=\frac{23040(1+p)^2}{p}\ldots\ldots(3).$$

Since the field is not to be a square one, put $p=2$; then $x=47520$, $px=95040$, $B=103680$, and $A=103680$. By giving to p any other values, we easily deduce the dimensions of an indefinite number of rectangular fields answering the conditions of the problem.

Also solved by *Hon JOSIAH H. DRUMMOND, JOHN M. LOWELL. C. D. SCHMITT and B. F. ROBINS.*

PROBLEMS.

35. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

It costs $C=\$22$ to paper a room $a=18$ feet long, $b=15$ feet wide, and $c=10$ feet high, with paper m/n th, $=\frac{3}{4}$, of a yard wide. Find the price of the paper per roll of $R=12$ linear yards.

36. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

I have three jars, A, B, and C, holding respectively $a=1$, $b=3$, and $c=5$ gallons. A is empty, B is full of water, and C is full of wine. I *fill* A from B; then I *fill* up B from C and pour the contents of A into C. After *repeating* this operation, how much wine is there in B? How much in C?